

able instrument, is not referred to; but the integrator which combines appliances for computing areas, moments, and moments of inertia of plane curves is described. This instrument has lately been introduced into ship-drawing offices, and is highly appreciated for the saving of time and labour which can be effected by its use, and for its comparative freedom from error. Complicated calculations can be made with this ingenious piece of mechanism by less highly-skilled draughtsmen than are required for performing the ordinary arithmetical calculations. This is a very important matter in mercantile shipyards, where the supply of scientifically-trained draughtsmen is not great. In referring to this point Sir E. J. Reed says that "in most private shipbuilding establishments these lads (drawing-office apprentices) are now required to pass an examination similar to that which candidates undergo for apprenticeship in Her Majesty's dockyards." We do not understand that this is so. It may be the case with one or two firms, but the system is a very exceptional one. Sir E. J. Reed gives a mathematical investigation of the properties of the integrator, and explains how to take off the readings for areas, moments, and moments of inertia. We notice an omission in connection with the figures given for the various constants that require to be applied as multipliers to these readings, for the purpose of converting them into actual units of measurement. The particular instrument to which the constants apply is not fully stated. The constant for areas, given as 15, and that for the area term in the expression for moment of inertia, given as 240, relate to instruments formerly supplied by M. Amsler, which had a different diameter of area wheel from those now made. We believe that the circumference of the area wheel is now 2.5 inches; so that the two constants which depend upon the size of the area wheel would, in that case, be 20 and 320, instead of 15 and 240.

The final chapters of the treatise deal with general questions relating to the rolling of ships at sea, and the effect of wind-pressure upon stability when ships are sailing among waves. The method of obtaining by experiment the vertical position of a ship's centre of gravity, and the precautions which have to be adopted in order to ensure fairly accurate results, are described.

The few omissions and defects we have pointed out are but of minor importance, and do not appreciably affect the general value of this very important treatise. It is not only the largest that has ever appeared in this country, but also the most intelligible, instructive, and complete exposition of the principles of stability. It forms a most valuable addition to the science of naval architecture, and one that has long been needed. Till now we have been unable to refer persons desirous of studying the various problems connected with the stability of ships to any work in which they would find the subject treated in a clear and comprehensive manner. Sir E. J. Reed has supplied a want that has long existed. We strongly recommend his book to all who are interested in the subject, and particularly to those whose connection with ships requires them to know upon what conditions stability depends, and how it is affected by all the various circumstances of construction and loading which may arise. Such a treatise should be especially welcome to students.

OUR BOOK SHELF

In the Lena Delta; a Narrative of the Search for Lieutenant Commander De Long and his Companions, followed by an Account of the Greely Relief Expedition and a Proposed Method of Reaching the North Pole. By G. W. Melville; Edited by G. Melville Philips. (London: Longmans and Co., 1885.)

THE sad story of the *Jeannette* Expedition has already been very fully told in the two volumes of journals left by Capt. De Long. Still, we do not object to this more detailed narrative of the experiences in the Lena Delta of those who managed to reach it, by the one most qualified to speak of them. It was by the strenuous exertions of Engineer Melville that the bodies of Capt. De Long and his companions were discovered, and that the few survivors were rescued. Concerning the physical and biological conditions of the great swamp formed about the mouths of the Lena, Mr. Melville does not tell us much more than we knew already; but his continual journeys to and from between the delta and such towns as Yakutsk, Tiumen, and others in this part of Siberia necessarily furnish us with many details of interest. As a story of remarkable adventures the book is certainly interesting. Mr. Melville's arctic enthusiasm was not in the least damped by the *Jeannette* misfortunes. Not only does he describe in the present volume his experiences as a member of the Greely Relief Expedition, but he means evidently to attempt to reach the Pole, if for no other reason but that it "may prevent other fools from going there." Mr. Melville's plan takes for granted that Franz Josef Land reaches to 85° N., which is probable enough; and he would therefore propose to utilise this as a basis of operations; around the Pole he supposes that a partial "vacuum" exists, and that partly as a consequence the ice-cap there is immovable, held in its place by the islands which he believes surround it. As to getting back when the Pole is reached, Mr. Melville believes that this could easily be effected either by Nova Zembla or Spitzbergen. Of course, the retreat would be secured by the establishment of carefully-selected depots. "Finally, I propose to prove this theory of reaching the North Pole by *going there myself*." Every one will wish him God speed; and there can be no doubt that the best arctic authorities are agreed that the next expedition should seriously try the Franz Josef Land route.

Stanford's Compendium of Geography and Travel—Europe. By F. W. Rudler, F.G.S., and G. W. Chisholm, B.Sc. Edited by Sir Andrew C. Ramsay, LL.D., F.R.S. With Ethnological Appendix by A. H. Keane, M.A.I. (London: Stanford, 1885.)

THIS many-authored and much-edited volume is the last of the series of Stanford's well-known "Compendium," the first volume of which was issued some six years ago. That first volume dealt with Africa, and was edited, it may be remembered, by Mr. Keith Johnston, who shortly after publication lost his life attempting to explore the continent which he had so well described. There have been subsequent editions of that volume edited by Mr. E. G. Ravenstein. The succeeding volumes were South America, by Mr. H. W. Bates; Australasia, by Mr. A. R. Wallace; Asia, by Prof. Keane and Sir Richard Temple; and North America, by Drs. Hayden and Schwyn. It will thus be seen that Mr. Stanford has been fortunate in his choice of editors for the several volumes. The Compendium professes to be based on Hellwald's German work, but it may throughout be regarded as virtually original. The various editors have put so much of their own into their several volumes, and given to the whole an orientation so essentially English, that it would be difficult to tell which is Hellwald and which the "editors." In the present volume the editors and authors (or one of them, for the title-page is awkward) have wisely

retained what Hellwald says concerning the English people.

The volume is quite equal to the best of its predecessors. The physical geography of Europe occupies quite one-half, and while necessarily of the nature of a summary, seems to us carefully and accurately written. The second part of the volume is devoted to what is known as "political" geography, while Mr. Chisholm has collected into an appendix a very useful series of statistical tables. As usual we have Prof. Keane's valuable ethnological appendix, occupying some thirty pages. Though Europe is the best-known of the Continents, its ethnology is more difficult to deal with than that of any other part of the world. "Races" and languages have become so mixed up and interchanged, that it is a matter of great difficulty to distinguish between the various elements. Mr. Keane has some difficult problems to face, but probably no one is more competent to solve them. His sections on "pure races" and "mixed languages" are of special interest; he rightly concludes that in Europe we have neither the one nor the other, nor probably will they be found in any part of the world. These ethnological appendices are quite worthy of being collected and extended and published separately as a useful manual of ethnology. The maps in the present volume are many, and of much scientific value. This "Compendium" as a whole may be accepted as a really trustworthy and manageable geographical reference-book.

Nine Years in Nippon; Sketches of Japanese Life and Manners. By Henry Faulds, L.F.P.S. (London: Alexander Gardner, 1885.)

THE author of this beautiful and entertaining volume is a missionary doctor who, in the course of his nine years' residence in Japan, has, as he tells us, mixed with every class in the country except the very highest. He has visited most of the usual sights, such as Fuji, Nikko, and the inland sea, but otherwise his professional duties appear to have kept him very close to Tokio. To make up for this he has seen the lower and middle classes of Japan as few other Europeans have had the opportunity of seeing them, and after all he is able to say that the land is not all barren. He stands up bravely against the redoubtable Miss Bird for the much-maligned morality of the Japanese people. He thinks that brilliant lady's dictum that the nation is sunk in immorality extremely harsh and erroneous. The recent intellectual progress of the Japanese is, he believes, very striking, though not as yet so general as many have supposed; their political progress is unprecedented, but he thinks that on the whole the moral elevation of the mass of the people within the last decade has been still more striking and noteworthy. A considerable portion of the volume is made up of bright, lively sketches of scenes by the way in Tokio, and along the roads in the interior. These are very well done, but they might almost be equally well done by an ordinary tourist with some literary gifts and graces. It is in the last half of the volume that we come on the real student and acute observer of Japan. It is only an old resident, whose familiarity with the everyday sights and sounds around him had never blunted his original sense of their picturesqueness and strangeness, that could have written the chapters on the Japanese philosophy of flowers, Japanese art in relation to nature, and how the Japanese amuse themselves. In connection with the universal spread of education throughout Japan (the author can only recall one or two clear instances in his experience of Japanese people being unable to read or write), he makes an observation which we do not remember to have seen or heard before, viz. that the cause is Buddhism. The effect of what he calls the new and genial enthusiasm of humanity, which came from India, taught everywhere the unity and brotherhood of man, and so literature could no longer be maintained as the peculiar possession of any caste of mere priests or

princes. "My Garden and its Guests" is a delightful chapter of popular natural history. In an introductory chapter, in which he surveys the canvas on which he is about to draw his sketches, he has a few words to say on the ethnology of the Japanese. He says that the Ainos, "in spite of a great deal of crude writing on the subject" (to which, it should be stated, Mr. Faulds has added his mite, though not in this book), cannot show any claim to be considered the aborigines; they are not necessarily older in their occupancy than the Japanese themselves. This heterodox statement is thrown off with a *nonchalant* air, as of one making a common matter-of-fact observation; but it would be interesting to know the author's grounds for it. The shell-heaps (to take only a single instance) which have been found near Tokio, and even farther south, and which resemble in every respect heaps formed, or in process of formation, outside Aino villages in Yezo, form a strong argument the other way; we were under the impression, also, that history told us of the existence of Ainos on the spot on which Ota Dokan built himself the fort which afterwards grew into Yedo in the fifteenth century. But it seems waste of time to refer to such matters in the case of a man who has the hardihood to confess that he does not know exactly what a Mongol is, and that he thinks it only deepens our ignorance immensely to call another race Mongoloid. To make up for this, however, and by way of washing his hands clear of the matter, he gives all the original theories by which science, aided by tradition, accounts for the original migration of the Japanese people. As there are six points of the compass (zenith and nadir being added) in far-eastern cosmography, so there are theories of migration from each one of these six points:—(1) the soil (Buddhist view); (2) America; (3) China, or Accadia; (4) Africa, or the Malay Peninsula, or the Southern Isles of the Pacific; (5) Saghalin, or Kamtschatka; (6) the celestial regions of the Sun; with which comprehensive category Mr. Faulds takes leave of ethnology. For the rest, the book is as charming in all externals as in its contents. It should take its place in the front rank among popular books on Japan; indeed, since Mitford's "Tales of Old Japan," we cannot recall a more interesting volume on the country, or one which should be more read in England.

LETTERS TO THE EDITOR

- [The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]
- [The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

Krakatoa

BY the return from the Caroline Islands, on the 25th inst., of the *Jennie Walker*, I am enabled to supply a few additional details about the westward progress of the equatorial smoke stream from Krakatoa in September 1883. In *NATURE*, October 2 (p. 537), is my extract from Miss Cathcart's journal describing the obscuration of the sun at Kusaie, or Strong's Island, on September 7, 1883. The Rev. Dr. Pease and wife came as passengers by the *Jennie Walker*. They state that, while they were dressing their children on the morning of September 7, the natives came anxiously asking what was the matter with the sun, which rose over the mountains with a strange aspect. It was cloudless, but pale, so as to be stared at freely. Its colour Dr. Pease called a sickly greenish-blue, as if plague-stricken. Mrs. Pease's journal described it as "of a bird's-egg-blue, softened as this colour would be by a thin gauze." Around the sun the sky was of a silvery gray. At the altitude of 45° the sun appeared of its usual brightness, but resumed its pallid green aspect as it declined in the west.